Subpart PP—Suppliers of Carbon Dioxide

§ 98.420 Definition of the source category.

(a) The carbon dioxide (CO_2) supplier source category consists of the following:

(1) Facilities with production process units that capture a CO_2 stream for purposes of supplying CO_2 for commercial applications or that capture and maintain custody of a CO_2 stream in order to sequester or otherwise inject it underground. Capture refers to the initial separation and removal of CO_2 from a manufacturing process or any other process.

(2) Facilities with CO_2 production wells that extract or produce a CO_2 stream for purposes of supplying CO_2 for commercial applications or that extract and maintain custody of a CO_2 stream in order to sequester or otherwise inject it underground.

(3) Importers or exporters of bulk CO_2.

(b) This source category is focused on upstream supply. It does not cover:

(1) Storage of CO_2 above ground or in geologic formations.

(2) Use of CO_2 in enhanced oil and gas recovery.

(3) Transportation or distribution of CO_2.

(4) Purification, compression, or processing of CO_2.

(5) On-site use of CO_2 captured on site.

(c) This source category does not include CO_2 imported or exported in equipment, such as fire extinguishers.

§ 98.421 Reporting threshold.

Any supplier of CO_2 who meets the requirements of § 98.2(a)(4) of subpart A of this part must report the mass of CO_2 captured, extracted, imported, or exported.

§ 98.422 GHGs to report.

(a) Mass of CO_2 captured from production process units.

(b) Mass of CO_2 extracted from CO_2 production wells.

(c) Mass of CO_2 imported.

(d) Mass of CO_2 exported.

[74 FR 56374, Oct. 30, 2009, as amended at 75 FR 79169, Dec. 17, 2010]

§ 98.423 Calculating CO_2 supply.

(a) Except as allowed in paragraph (b) of this section, calculate the annual mass of CO_2 captured, extracted, imported, or exported through each flow meter in accordance with the procedures specified in either paragraph (a)(1) or (a)(2) of this section. If multiple flow meters are used, you shall calculate the annual mass of CO_2 for all flow meters according to the procedures specified in paragraph (a)(3) of this section.

(1) For each mass flow meter, you shall calculate quarterly the mass of CO_2 in a CO_2 stream in metric tons by multiplying the mass flow by the composition data, according to Equation PP–1 of this section. Mass flow and composition data measurements shall be made in accordance with § 98.424 of this subpart.

$$CO_{2,u} = \sum_{p=1}^{4} Q_{p,u} * C_{CO_2,p,u} \qquad \text{(Eq. PP-1)}$$

Where:

$CO_{2,u}$ = Annual mass of CO_2 (metric tons) through flow meter u.

$C_{CO_2,p,u}$ = Quarterly CO_2 concentration measurement in flow for flow meter u in quarter p (wt. $\%CO_2$).

$Q_{p,u}$ = Quarterly mass flow rate measurement for flow meter u in quarter p (metric tons).

p = Quarter of the year.

u = Flow meter.

(2) For each volumetric flow meter, you shall calculate quarterly the mass of CO_2 in a CO_2 stream in metric tons by multiplying the volumetric flow by

the concentration and density data, according to Equation PP–2 of this section. Volumetric flow, concentration and density data measurements shall be made in accordance with § 98.424 of this section.

$$CO_{2,u} = \sum_{p=1}^{4} Q_p * D_p * C_{CO_{2,p}} \qquad \text{(Eq. PP-2)}$$

Where:

$CO_{2,u}$ = Annual mass of CO_2 (metric tons) through flow meter u.

$C_{CO2,p}$ = Quarterly CO_2 concentration measurement in flow for flow meter u in quarter p (measured as either volume % CO_2 or weight % CO_2).

Q_p = Quarterly volumetric flow rate measurement for flow meter u in quarter p (standard cubic meters).

D_p = Density of CO_2 in quarter p (metric tons CO_2 per standard cubic meter) for flow meter u if $C_{CO2,p}$ is measured as volume % CO_2, or density of the whole CO_2 stream for flow meter u (metric tons per standard cubic meter) if $C_{CO2,p}$ is measured as weight % CO_2.

p = Quarter of the year.

u = Flow meter.

(3) To aggregate data, use either Equation PP–3a or PP–3b in this paragraph, as appropriate.

(i) For facilities with production process units or production wells that capture or extract a CO_2 stream and either measure it after segregation or do not segregate the flow, calculate the total CO_2 supplied in accordance with Equation PP–3a in paragraph (a)(3).

$$CO_2 = \sum_{p=1}^{U} CO_{2,u} \qquad \text{(Eq. PP-3a)}$$

where:

CO_2 = Total annual mass of CO_2 (metric tons).

$CO_{2,u}$ = Annual mass of CO_2 (metric tons) through flow meter u.

u = Flow meter.

(ii) For facilities with production process units that capture a CO_2 stream and measure it ahead of segregation, calculate the total CO_2 supplied in accordance with Equation PP–3b.

$$CO_2 = \sum_{p=1}^{U} CO_{2,u} - \sum_{p=1}^{V} CO_{2,v} \qquad \text{(Eq. PP-3b)}$$

where:

CO_2 = Total annual mass of CO_2 (metric tons).

$CO_{2,u}$ = Annual mass of CO_2 (metric tons) through main flow meter u.

$CO_{2,v}$ = Annual mass of CO_2 (metric tons) through subsequent flow meter v for use on site.

u = Main flow meter.

v = Subsequent flow meter.

(b) As an alternative to paragraphs (a)(1) through (3) of this section for CO_2 that is supplied in containers, calculate the annual mass of CO_2 supplied in containers delivered by each CO_2 stream in accordance with the procedures specified in either paragraph (b)(1) or (b)(2) of this section. If multiple CO_2 streams are used to deliver CO_2 to containers, you shall calculate the annual mass of CO_2 supplied in containers delivered by all CO_2 streams according to the procedures specified in paragraph (b)(3) of this section.

(1) For each CO_2 stream that delivers CO_2 to containers, for which mass is measured, you shall calculate CO_2 supply in containers using Equation PP–1 of this section.

where:

$CO_{2,u}$ = Annual mass of CO_2 (metric tons) supplied in containers delivered by CO_2 stream u.
$C_{CO2,p,u}$ = Quarterly CO_2 concentration measurement of CO_2 stream u that delivers CO_2 to containers in quarter p (wt. $\%CO_2$).
$Q_{p,u}$ = Quarterly mass of contents supplied in all containers delivered by CO_2 stream u in quarter p (metric tons).
p = Quarter of the year.
u = CO_2 stream that delivers to containers.

(2) For each CO_2 stream that delivers to containers, for which volume is measured, you shall calculate CO_2 supply in containers using Equation PP–2 of this section.

where:

$CO_{2,u}$ = Annual mass of CO_2 (metric tons) supplied in containers delivered by CO_2 stream u.
$C_{CO2,p}$ = Quarterly CO_2 concentration measurement of CO_2 stream u that delivers CO_2 to containers in quarter p (measured as either volume % CO_2 or weight % CO_2).
Q_p = Quarterly volume of contents supplied in all containers delivered by CO_2 stream u in quarter p (standard cubic meters).
D_p = Quarterly CO_2 density determination for CO_2 stream u in quarter p (metric tons per standard cubic meter) if $CO_{2,p}$ is measured as volume % CO_2, or density of CO_2 stream u (metric tons per standard cubic meter) if $CO_{2,p}$ is measured as weight % CO_2.
p = Quarter of the year.
u = CO_2 stream that delivers to containers.

(3) To aggregate data, sum the mass of CO_2 supplied in containers delivered by all CO_2 streams in accordance with Equation PP–3a of this section.

where:

CO_2 = Annual mass of CO_2 (metric tons) supplied in containers delivered by all CO_2 streams.
$CO_{2,u}$ = Annual mass of CO_2 (metric tons) supplied in containers delivered by CO_2 stream u.
u = CO_2 stream that delivers to containers.

(c) Importers or exporters that import or export CO_2 in containers shall calculate the total mass of CO_2 imported or exported in metric tons based on summing the mass in each CO_2 container using weigh bills, scales, or load cells according to Equation PP–4 of this section.

$$CO_2 = \sum_{p=1}^{I} Q \qquad \text{(Eq. PP-4)}$$

where:

CO_2 = Annual mass of CO_2 (metric tons).
Q = Annual mass in all CO_2 containers imported or exported during the reporting year (metric tons).

[74 FR 56374, Oct. 30, 2009, as amended at 75 FR 79169, Dec. 17, 2010; 78 FR 71977, Nov. 29, 2013]

§ 98.424 Monitoring and QA/QC requirements.

(a) *Determination of quantity.* (1) Reporters following the procedures in § 98.423(a) shall determine quantity using a flow meter or meters located in accordance with this paragraph.

(i) If the CO_2 stream is segregated such that only a portion is captured for commercial application or for injection, you must locate the flow meter according to the following:

(A) For reporters following the procedures in § 98.423(a)(3)(i), you must locate the flow meter(s) after the point of segregation.

(B) For reporters following the procedures in paragraph (a)(3)(ii) of § 98.423, you must locate the main flow meter(s) on the captured CO_2 stream(s) prior to the point of segregation and the subsequent flow meter(s) on the CO_2 stream(s) for on-site use after the point of segregation. You may only follow the procedures in paragraph (a)(3)(ii) of § 98.423 if the CO_2 stream(s) for on-site use is/are the only diversion(s) from the main, captured CO_2 stream(s) after the main flow meter location(s).